CLAIMS

What is claimed is:

1. A method comprising:
reading data from a memory location;
determining if the data read is corrupt; and
writing a failure codeword in the memory location if the data read is corrupt.

2. The method of claim 1 wherein the memory location is a nonvolatile destructive read memory location.

3. The method of claim 1 wherein the failure codeword is chosen so that it has a mathematical distance greater than all correctable data patterns.

4. The method of claim 1 wherein the data read is encoded by an error correction code.

5. The method of claim 4 wherein the failure codeword is chosen so that its mathematical distance from all correctable data patterns of the error correction code is greater than the minimum distance of the error correction code.

6. The method of claim 1 wherein the data read includes coding bits which are utilized for error correction of the data.

7. The method of claim 1 wherein determining if the data read is corrupt includes,
decoding the data read based on an error correction code.

8. The method of claim 1 wherein determining if the data read is corrupt includes,

determining if the data read is different from the data originally written to the memory location.

9. The method of claim 1 further comprising:

writing the data to the memory location from where it was read if the data is not corrupt.

10. An apparatus comprising:

a data storage device;

a read device coupled to the data storage device to read data from a memory location in the data storage device; and

an error correction code decoder coupled to the read device to determine if the data read is corrupt, and if so, cause a failure codeword to be written to the memory location from where the data was read.

11. The apparatus of claim 10 wherein the data storage device is a nonvolatile read-destructive memory device.

12. The apparatus of claim 10 wherein the failure codeword is chosen so that it has a mathematical distance greater than all correctable data patterns.

13. The apparatus of claim 10 wherein the failure codeword is chosen so that its mathematical distance from all correctable data patterns of the error correction code is greater than the minimum distance of the error correction code employed.

14. The apparatus of claim 10 wherein the data read is corrupt if it is different from the data originally written to the memory location.

15. The apparatus of claim 10 further comprising:

a write device coupled to the data storage device to store data into the data storage device.

16. The apparatus of claim 15 wherein the write device is coupled to the read device to write back the data read by the read device to the memory location from where it was read if the data is not corrupt.

17. The apparatus of claim 15 further comprising:

an encoding device coupled to the write device to encode data according to an error correction code before it is written to the data storage device.

18. The apparatus of claim 15 further comprising:

a controller coupled to the write device and the read device to synchronize access to the data storage device.

19. A machine-readable medium comprising at least one instruction to preserve the failure state of a memory location, which when executed by a processor, causes the processor to perform operations comprising:

reading data from a data storage device;

determining if the data read is corrupt; and

writing a failure codeword to the memory location of the data storage device from where the data was read if the data is corrupt.

20. The machine-readable medium claim 19 wherein the memory location is a nonvolatile read-destructive memory location.

21. The machine-readable medium of claim 19 further comprising at least one instruction which causes the processor to perform operations comprising:

decoding the data read based on an error correction code.

22. The machine-readable medium of claim 21 wherein the failure codeword is chosen so that its mathematical distance from all correctable data patterns of the error correction

code is greater than the minimum distance of the error correction code.

23. The machine-readable medium of claim 19 wherein determining if the data read is corrupt includes,

determining if the data read is different from the data originally written to the memory location.

24. The machine-readable medium of claim 19 further comprising at least one instruction which causes the processor to perform operations comprising:

writing the data to the memory location from where it was read if the data is not corrupt.

25. An integrated circuit comprising:

a first processing unit configured to read data from a data storage device; and

a second processing unit communicatively coupled to the first processing unit to decode the read data, determine if the data is corrupt, and if so, cause a failure codeword to be written to the memory location from where the data was read in the memory storage device.

26. The integrated circuit of claim 25 wherein the data storage device is a nonvolatile read-destructive memory device.

27. The integrated circuit of claim 25 wherein the second processing unit decodes the read data according an error correction code.

28. The integrated circuit of claim 25 wherein the failure codeword is chosen so that its mathematical distance from all correctable data patterns of the error correction code is

greater than the minimum distance of the error correction code.

29. The integrated circuit of claim 25 wherein the data read is corrupt if it is different from the data originally written to the memory location.

30. The integrated circuit of claim 25 wherein the read device causes the read data to be written back to the memory location from where it was read if the data is not corrupt.